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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/594,392

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Federico Pavan

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EXAMINER

BURKHART, ELIZABETH A

ART UNIT

PAPER NUMBER

1792

MAIL DATE

DELIVERY MODE

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/594,392	Applicant(s) PAVAN ET AL.	
	Examiner Elizabeth Burkhart	Art Unit 1792	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 27 September 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 31-60 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 31-60 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 27 September 2006 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>9/27/06</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Objections

1. Claim 42 is objected to because of the following informalities: Claim 42 appears to have a typographical error wherein "mm" should be "µm" as evidenced by p. 16, line 5 of the instant specification. Appropriate correction is required. For purposes of examination, the term "mm" is considered to be "µm".

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

2. Claim 59 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Claim 59 recites the limitation "the at least one surface treatment" (emphasis added) in lines 2-3. There is insufficient antecedent basis for this limitation in the claim. For the purposes of examination, the limitation is considered to be "at least one surface treatment".

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 31-39, 41-45, and 50-53 are rejected under 35 U.S.C. 103(a) as being unpatentable over Doujak et al (US 2003/0003319) in view of Yoshikawa et al ('419).

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Doujak teaches a process for producing a metal wire comprising a steel core and a metal coating layer in a radially outer position with respect to the steel core, the metal coating layer comprising an alloy made of copper and zinc. The steel core is coated by alternately depositing separate layers of copper and zinc onto said core and drawing the coated core to form said alloy (e.g. brass). The copper and zinc layers may be deposited by electro-deposition or other known methods, such as CVD (Abstract, [0008], [0011]).

Doujak does not teach that each of the separate layers has a thickness not greater than 50 nm.

Yoshikawa teaches depositing copper, zinc, or brass onto steel using plasma deposition (magnetron sputtering). The thickness of the layers may be 10 Å to 1 µm (1-1000 nm) to have little influence on the properties of the final composite product (Col. 5, lines 25-50, Col. 6, lines 18-35).

It would have been obvious to one of ordinary skill in the art at the time of invention by applicant to deposit the copper and zinc layers of Doujak using a plasma deposition method as suggested by Yoshikawa in order to form thin films having a thickness that have little influence on the properties of the final composite product.

Regarding Claims 31-33, the subject matter as a whole would have been obvious to one of ordinary skill in the art at the time of invention by applicant if the overlapping portion of the thickness range disclosed by Yoshikawa was selected because overlapping ranges have been held to be a prima facie case of obviousness, see *In re Wortheim* 191 USPQ 90.

Regarding Claims 38 and 39, Yoshikawa teaches that the coating is carried out in a vacuum chamber at a first predetermined pressure within the claimed range (Col. 8, lines 50-65).

Regarding Claims 41-45, Doujak teaches that the steel core has an initial diameter of 0.8-3.0 mm, the coating layer has an initial thickness of 0.75-4.0 microns, the drawn wire has a final diameter of 0.12-0.8 mm, and the coating layer has a final thickness of 0.1-0.3 microns (100-300 nm) [0013]-[0015].

Regarding Claim 53, Doujak teaches the brass coating has a copper content of 60-72% by weight [0014].

Thus, claims 31-39, 41-45, and 50-53 would have been obvious within the meaning of 35 USC 103 over the combined teachings of Doujak and Yoshikawa.

4. Claims 40, 48, and 49 are rejected under 35 U.S.C. 103(a) as being unpatentable over Doujak et al (US 2003/0003319) in view of Yoshikawa et al ('419) as applied above and further in view of Sawada et al ('811).

Doujak and Yoshikawa do not disclose that the steel core is continuously coated and drawn.

Sawada teaches coating a metal core wire with an alloy coating by sputtering or plasma CVD in order to deposit the coating with high adhesion strength. The wire is continuously coated and drawn to form a wire of high quality and cleanliness (Fig. 2, Col. 2, lines 48-65, Col. 6, lines 1-5).

It would have been obvious to one of ordinary skill in the art at the time of invention by applicant to use a continuous sputtering unit as suggested by Sawada to

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deposit the sputtered coating of Yoshikawa in order to form a wire of high quality and cleanliness.

Regarding Claim 40, Doujak discloses depositing a layer onto the wire while conveying the wire at a speed of 18-50 m/min [0063].

Regarding Claims 48 and 49, Sawada teaches that the core wire passes through a sequence of at least two cathodes arranged in the deposition chamber (Fig. 1 and 2, Col. 5, line 35) and that the core wire passes through the vacuum chamber multiple times (Col. 4, lines 63-65).

Thus, claims 40, 48, and 49 would have been obvious within the meaning of 35 USC 103 over the combined teachings of Doujak, Yoshikawa, and Sawada.

5. Claims 46 and 47 are rejected under 35 U.S.C. 103(a) as being unpatentable over Doujak et al (US 2003/0003319) in view of Yoshikawa et al ('419) and Sawada et al ('811) as applied above and further in view of Chambaere et al ('115).

Sawada teaches conveying the steel core to a pre-chamber **3, 13** (Fig. 1 and 2, Col. 5, line 33 and 68), but does not teach that it has a second pressure higher than the first pressure. Yoshikawa discloses that the substrate surface is cleaned in an argon plasma prior to depositing the sputtered coating (Col. 8, lines 55-60).

Chambaere teaches cleaning metal substrates, such as a metal wire, in an inert sputtering gas such as argon at a pressure of 0.01-10 torr (0.013-13.33 mbar) (Abstract, Col. 3, lines 53-67) in order to achieve an excellent cleaning effect.

It would have been obvious to one of ordinary skill in the art at the time of invention by applicant to use the pre-chamber of Sawada to clean the wire prior to

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sputter deposition as suggested by Yoshikawa at conditions disclosed by Chambaere in order to achieve an excellent cleaning effect on the wire.

Thus, claims 46 and 47 would have been obvious within the meaning of 35 USC 103 over the combined teachings of Doujak, Yoshikawa, Sawada, and Chambaere.

6. Claims 54-60 are rejected under 35 U.S.C. 103(a) as being unpatentable over Doujak et al (US 2003/0003319) in view of Yoshikawa et al ('419) as applied above and further in view of Dambre ('249).

Doujak and Yoshikawa do not disclose the step of submitting the steel core to at least one surface treatment.

Dambre teaches submitting a steel wire to a surface treatment, such as pickling, prior to deposition of a brass coating in order to clean the wire (Col. 1, lines 48-62).

It would have been obvious to one of ordinary skill in the art at the time of invention by applicant to submit the steel core in the process of Doujak or Yoshikawa to a surface treatment prior to coating as suggested by Dambre in order to clean the steel core.

Regarding Claims 55-60, Dambre teaches pickling the core in a pickling bath, washing the pickled core in water, drying the washed core, thermally treating the steel core (patenting), and drawing the steel core before the thermal treatment step. A thermal treatment step may be performed after the surface treatment step (Col. 1, lines 55-65, Col. 3, lines 55-60).

Thus, claims 54-60 would have been obvious within the meaning of 35 USC 103 over the combined teachings of Doujak, Yoshikawa, and Dambre.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Elizabeth Burkhart whose telephone number is (571)272-6647. The examiner can normally be reached on M-Th 7-5:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Timothy Meeks can be reached on 571-272-1423. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Frederick J. Parker/
Primary Examiner, Art Unit 1792

/Elizabeth Burkhart/
Examiner, Art Unit 1792